

Shin, A. A.

Peat Logs

Mechanized preparation of peat fields for operation of machine UMI-TUM, Torf. prom. 29,
No. 3, 1956.

Monthly List of Russian Accessions, Library of Congress
May 1956. UNCLASSIFIED.

SHCHEPKIN, A.Ye., inzhener.

Conversion of hydro peat fields for winning milled peat. Torf.prom.33
no.4:11-13 '56. (MLRA 9:9)

1.Torfopredpriyatiye Tesovo l.
(Peat industry)

ALEKSEYEV, Ye.T.; APENCHENKO, S.S.; BASOV, A.P.; BAUSIN, A.F.; BERSHADSKIY, L.S.;
VELLER, M.A.; GINZBURG L.N.; GUSEV, S.A.; DANILOV, G.V.; DOLGIKH, M.S.;
DRUZHININ, N.N.; YEFIMOV, V.S.; ZAVADSKIY, N.V.; IVASHECHKIN, N.V.;
KARAKIN, F.F.; KUZHMAN, G.I.; LOBANOV, S.P.; MERKULOV, Ya.V.; NIKODIMOV,
P.I.; PANKRATOV, N.S.; PYATAKOV, L.V.; RODICHEV, A.F.; SMIRNOV, M.S.;
STRUKOV, B.I.; SAVOCHKIN, S.M.; SAMSONOV, N.N.; SINITSYN, N.A.; SKOLOV,
A.A.; SOLOPOV, S.G.; CHELYSHEV, S.G.; SHCHEPKIN, A.Ye.

Fedor Nikolaevich Krylov; obituary. Torf. prom. 35 no.6:32 '58.

(MIRA 11:10)

(Krylov, Fedor Nikolaevich, 1903-1958)

SHCHEPKIN, B.P.

SCHHEPKIN, B.P., glavnyy mekhanik

Increasing the productivity of the MSh-41 mortar pump. Rats.
i izobr. predl. v stroi. no.86:6-7 '54. (MIRA 8:8)
(Plastering) (Pumping machinery)

SOV/51-7-2-7/34

AUTHORS: Bulanin, M.O., Denisov, G.S. and Shchepkin, D.N.

TITLE: On the Study of Equilibria During Formation of the Hydrogen Bond in Solutions, Using Infrared Absorption Spectra. The Case of Inseparable Bands. (Ob izuchenii ravnovesiy, obuslovlennykh obrazovaniyem vodородной svyazi v rastvorakh, po infrakrasnym spektram pogloshcheniya. Sluchay nerazdelyayushchikhsya polos)

PERIODICAL: Optika i spektroskopiya, 1959, Vol 7, Nr 2, pp 187-192 (USSR)

ABSTRACT: An infrared absorption spectroscopy can be used to determine accurately the concentrations of free and associated molecules in solutions and to find the equilibrium constant K for the reaction of formation of hydrogen bonds. The temperature dependence of the equilibrium constant can be used to determine the energy of the reaction and hence the energy of the hydrogen bond. The present authors discuss theoretical determination of the equilibrium constant K and the integral absorption coefficients ϵ_k of the molecules which make up the associated complex (formed by means of a hydrogen bond between a molecule of the solvent and a molecule of the solute). The discussion deals with the case when the absorption bands of the monomer and the complex are overlapping. Equilibrium of the type $A + B \rightleftharpoons AB$ (where A is the solute and B is the

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SOV/51-7-2-7/34

On the Study of Equilibria During Formation of the Hydrogen Bond in Solutions, Using Infrared Absorption Spectra. The Case of Inseparable Bands.

solvent) is considered. It is shown that the treatment of the experimental results described by Lord and his co-workers (Ref 6) leads to considerable errors. A better method of determination of \bar{K} and ϵ_k is described; this method uses the least-squares technique. The paper is entirely theoretical. Acknowledgment is made to Prof. V.M. Chulanovskiy for his advice. There are 4 figures, 1 mathematical appendix and 9 references, 2 of which are Soviet, 4 English, 1 French, 1 German and 1 from an international journal.

SUBMITTED: November 28, 1958

Card 2/2

67155

107-51-7-8-9-88

24.3410

AUTHORS:

Chulanovskiy, V.M., Pevsakhson, I.V. and Shehepkin, D.N.

TITLE:

Determination of the Absolute Values of Parameters Characterizing the Intensity in Infrared Absorption Spectra in the Absence of Secular Distortions

PERIODICAL: Optika i spektroskopiya, 1959, Vol 7, No 6, pp 763-769 (USSR)

ABSTRACT:

In currently used infrared single-beam automatic-recording spectrophotometers the so-called secular distortions, due to inertia of the amplifying and recording parts of the apparatus at the usual scanning rate cause great difficulties in determination of the true values of spectral parameters. The authors employed the following method which avoids these secular distortions. Recording was started with the beam cut off in order to obtain the zero level of intensity. Then a cell containing pure solvent was introduced into the beam (the corresponding intensity was I_0). As soon as the recorder started to draw a straight line parallel to the zero line a cell containing solution was introduced into the beam and the corresponding intensity I recorded. Again when the recorder began to draw a line parallel to the zero line the beam was cut off completely. In this way a record shown in a figure

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67155

SOV/51-7-6-9/38

Determination of the Absolute Values of Parameters Characterizing the Intensity in
Infrared Absorption Spectra in the Absence of Secular Distortions

on p 764 was obtained. The time lost by this process was fully compensated by the great simplicity and reliability of measuring intensity I , which was required to determine optical density. The return to zero after each cycle of measurements avoids the necessity of controlled records. Under the conditions described, the secular distortions are avoided entirely and the distortions due to noise can be easily found. The authors describe three methods of determining spectral parameters, such as optical density at the band maximum, integral density and half-width of the band, corrected for distortions due to the monochromator and expressed in terms of the latter's apparatus function. The computational work reported in this paper was carried out by I.V. Peysakhson and the experimental part was carried out by D.N. Shchepkin. There are 1 figure and 5 references, 3 of which are Soviet and 2 English.

SUBMITTED: May 14, 1969

4

3rd 2/2

68311

Determination of the Absolute values of the Intensity Parameters in an Infrared Absorption Spectrum when Secular Distortions are Absent. II. SOV/54-8-1-10/40

slits; $\Delta\nu_0$ is the normal spectral width of the slits; $\Delta\nu_e$ is the effective spectral width of the slits; b is the observed band half-width (its width when $K = 0.5 K_p$); b_0 is the true half-width assuming a dispersion form of the band contour; K_m is the optical density observed at the absorption maximum; k_m is the true optical density calculated for a given slit-width assuming a dispersion form of the band contour; k_m^* is the true optical density calculated using the three-point technique (cf. Part I). The relative error in determination of k_m and b_0 was 0.4-0.8%. The maximum departure of single values from the means did not exceed 1% for slit-widths up to 0.4 band-width. The results for the four absorption bands employed are given separately in Tables 1-4. Table 5 summarizes the results and lists also the values of b_0 and k_m obtained by extrapolation to $\Delta\nu_e = 0$ (cf. Part I). Table 5 shows that all methods give practically the same values of the optical density at the band maxima, i.e. k_m , k_m^* and $(k_p)_{extrapol}$ are practically the same. There are 2 figures, 5 tables and 2 references, 1 of which is Soviet and 1 from an international journal.

SUBMITTED: June 1, 1950

Card 1/1

68320

OC/51-8-1-21/40

Experimental Determination of the Infrared Absorption-Band Parameters in Liquids

the optical density at the absorption maximum: k_m is the optical density at the absorption maximum found using Peysakhson's Eq (8); k'_m is the optical density at the absorption maximum calculated using Peysakhson's Eq (7); b_0 (extrapol.) is the band width found by extrapolation to the zero slit width using Peysakhson's Eq (6); $b^2 = b_0^2 + c_1 \Delta \nu_0^2$; k_m (extrapol.) is the optical density found by extrapolation to the zero slit width using Peysakhson's Eq (8); $K_m = k'_m - c_1 \Delta \nu_0^2$. The values of b , K_m , k_m , k'_m , b_0 of chloroform (ν_{CH} , 3020 cm^{-1} , layer thickness of 0.026 mm, $\Delta \nu_0 = 1.25$ cm^{-1}) are given as a function of the slit width ϵ in microns (col 1) in Table 1. Tables 2 and 3 give the same quantities for methyl ethyl ketone⁷ ($2\nu_{C=O}$, 3417 cm^{-1} , layer thickness of 0.090 mm, $\Delta \nu_0 = 1.6$ cm^{-1} , and a solution of diethylaniline⁸ in CCl_4 (0.00745 mole/litre, ν_{NH} , 3437 cm^{-1} , layer thickness of 3 cm, $\Delta \nu_0 = 1.80$ cm^{-1}). The mean values of b_0 (extrapol.), b_0 , k_m (extrapol.), k_m , k'_m for all the three substances are given in Table 4:

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68320

SOV/51-8-1-21/40

Experimental Determination of the Infrared Absorption-Band Parameters in Liquids

	chloro- form	Methyl ethyl ketone	diphenyl- amine in CCl_4
b_0 (extrapol.)	15.4	32.5	25.3
b_0	15.2	33.0	25.2
k_m (extrapol.)	0.846	0.985	1.846
k_m	0.850	0.985	1.845
k_m'	0.650	0.956	1.835

The $b_0^2(\Delta\nu_0^2)$ and $k_m(\Delta\nu_0^2)$ dependences for chloroform are shown in Figs 1 and 2 respectively; the straight lines which are obtained confirm the validity of Paysakhson's Eqs (5) and (6). The relative error in various methods of determination of b_0 and k_m , as indicated by the scatter of the points obtained, amounts to 0.4-0.7%; the maximum departures of individual measurements from the mean values do not exceed 1% for slit widths up to 0.4 of the band width. There are 3 figures and 4 tables.

Note. This is a complete translation.

Card 3/3

SITCHEPKIN, D.N.

Notes on Lectures Published Earlier Elsewhere:	
I.B. FISHER, Contemporary State and Achievements of the Theory of Liquids	139
V.A. KOPCHENKO and I. I. FLUKA, Fluctuations of the Microstructure of Simple Liquids and Water	139
A. I. YAKOVLEV, Statistical Theory of Liquid Solutions	140
M.YE. GILATSEVICH, On the Higher Approximations in the Form of "plasma-like" Decompositions	141
V. I. LUTCHENKO, Spectral Method Investigation into the Structure of Non-Ideal Solutions	142
I.O. GOLANIN and I. I. KUCHENKIN, Investigation into Inter-molecular Interactions in Aliphatic Mercaptanes and Their Solutions by means of Infrared Absorption Spectra	142
YE.V. SHUVALOVA, On the Spectral Manifestation of the Hydrogen Bond in Some Alkynes	143

STRUCTURE AND PHYSICAL PROPERTIES OF MATTER IN A LIQUID STATE
reports read at the 4th Conference convened in KIEV from 1 to 5 June
1959, published by the Publisher House of KIEV University, KIEV,
USSR, 1962

BORGEST, V.A.; SHCHEPKIN, D.N.

Simple infrared spectrometer having a diffraction grating based
on an IKS-6 instrument. Prib. i tekhn. eksp. 7 no.2:173-174
Mr-Ap '62. (MIRA 15:5)

1. Leningradskiy gosudarstvennyy universitet.
(Spectrometer) (Diffraction gratings)

SHCHEPIN, G.G.

McLain's and Mal'tsev's postulates for one class of regular
operations on groups. Usp. mat. nauk 20 no.3:219-226 My-Je '65.
(MIRA 18:6)

SHCHERBA, G.G.

Entrance problem for the nilpotent product of finitely presented groups. Dokl. AN SSSR 140 no.2:294-297 Jan 1985. (RUS 14:1)

1. Moskovskiy gosudarstvennyy pedagogicheskiy institut im. V.I. Lenina. Submitted June 1984.

AUTHOR: Shchepkin, G.V., Candidate of Technical Sciences,
Lecturer.

122-2-4/23

TITLE: Designers' reference sheets. The design of shafts for
endurance strength. (Listki dlya konstruktora. Raschet
valov na vynoslivost')

PERIODICAL: "Vestnik Mashinostroyeniya" (Engineering Journal),
1957, No.2, pp. 25 - 30 (U.S.S.R.)

ABSTRACT: Well known expressions for stresses due to combined loads
and the effective strength under various types of load cycles
are assembled and design computation procedures for determining,
the reverse factor under actual loads are presented with the
help of some typical examples of stepped shafts and axles.

There are 5 figures, including 3 graphs and 4 Slavic
Card 1/1 references.

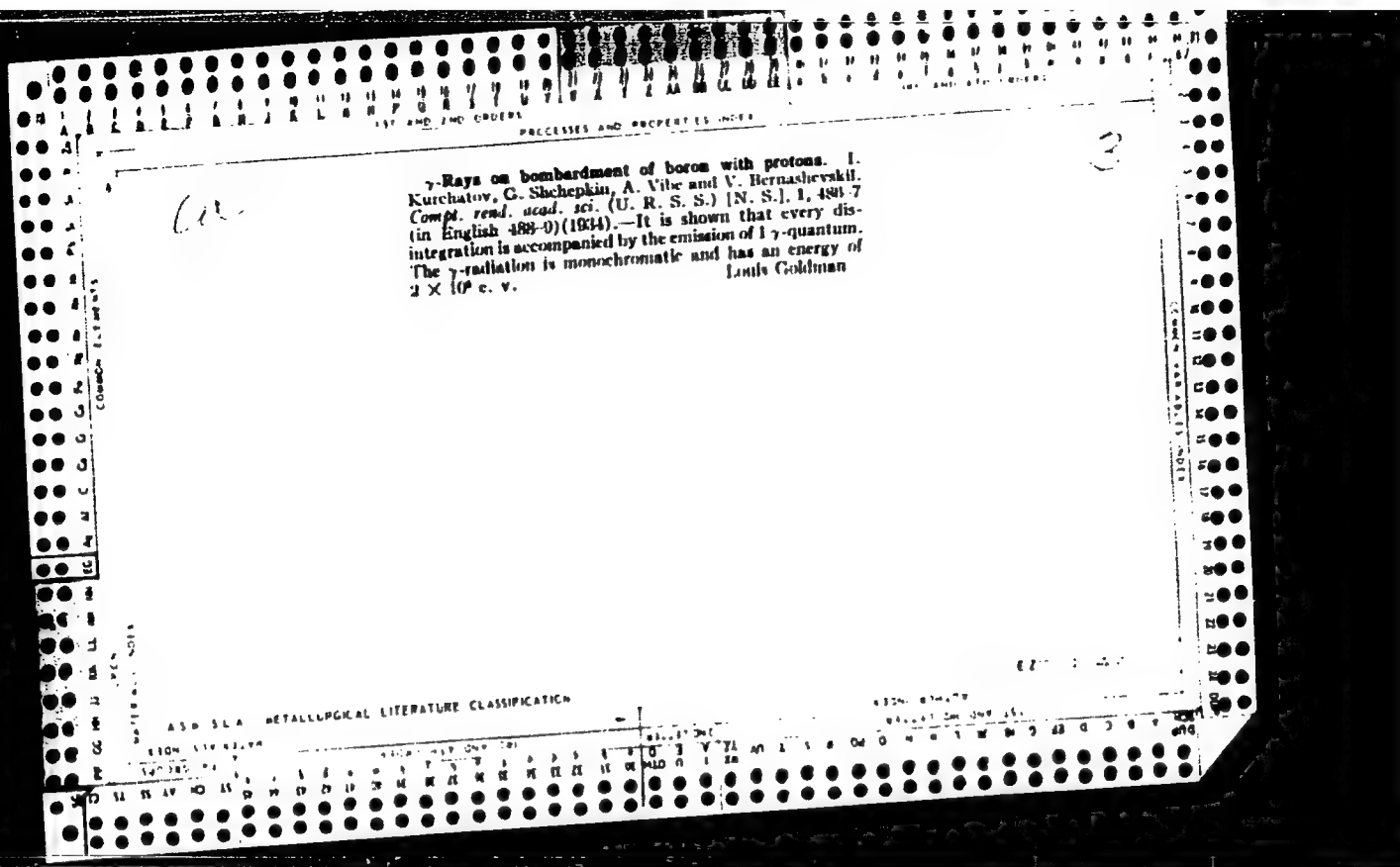
AVAILABLE: Library of Congress

SHCHEPKIN, G.V.

Static-strength analysis of shafts and axles. Trudy KhPI. Ser. mash. 19
no. 5:125-131 '59. (MIRA 14:9)
(Strength of materials)

SHCHERBIN, I. Ya.

Leningrad Physico-technical Inst., Dept. Physico-Math. Sci., Acad. Sci., -1930-43-.
"On the Question of the Radioactivity of He³," Zhur. Eksper. i Teoret. Fiz., No. 4, 1934;
"Scattering of Slow Neutrons by Hydrogen," ibid., No. 5, 1935; "Neutron Energy and the
Fermi Effect," ibid., No. 8, 1936; "The Proportional Counter of Protons," ibid., 5, No. 2,
1939; "On the Methods Used for Studying the Scattering of Alpha Particles in Gases," ibid.,
10, No. 1, 1940.



SHCHEPKIN, G.

Fermi effect in phosphorus. I. V. Kurchatov, L. Muisovskiy, G. Shchepkin and A. Vibe. Compt. rend. acad. sci. U.R.S.S. 3, 221-3 (in English 224-5) (1934).- In addn. to the half-life period of 3 hrs. found by Fermi for the radioactive element formed by the neutron bombardment of P, there is another of 3 min. For a 10-min. bombardment the radiation from the short-life disintegration is 6 times as intense as that for the half life of 3 hrs. The short-life radiation is also harder. It is suggested that the half-life period of 3hrs. is due to Si^{31} formed by neutron capture of P with the emission of a proton, in agreement with Fermi, while the half-life period of 3 min. is due to Al^{28} formed by neutron capture of P with the emission of an α -particle.

Morris Muskat

SHCHERBIN, G.

The Fermi effect in aluminum. B. Kurchatov, L. V. Kurchatov, G. Shchepkin and A. Vibe. Compt. rend. dead. sci. U.R.S.S. 3, 226-7 (in English 228-9) (1934).- In addn. to the half-life period of 12 min. previously reported by Fermi for the radioactive element formed by the neutron bombardment of Al, there is an intense radiation with a half life of over 12 hrs. The 12-min. radiation is also accompanied by a radiation, of the same half life, with intensity corresponding to one quantum for each decomp. Chem. tests show the 12-min. period element to be RaMg^{27} rather than RaNa^{24} . The latter probably gives the 12-hr. disintegration. M. M.

SHCHEPKIN, G.

Fermi effect in aluminum. II. I. Kurchatov, L. Mulsovskiy, B. Kurchatov, G. Shchepkin and A. Vibe. Compt. rend. acad. sci. U.R. S. S. 3, 422-3 (in English 423-4) (1934).- Al bombarded with neutrons gives 2 radioactive products, one with a short and one with a very long period. The half-decompn. period for the latter product is about 12 hrs. The initial intensity of the γ -radiation from both products is the same. The counter throws decreased only from 120 to 90 per min. when 5.4 mm. of Pb was used for a screen for the long-period product. This long-period product is shown to be radioactive Na. When an Al nucleus captures a neutron these 2 reactions occur: $Al^{27} n^1 = Ra-Mg^{27} H^1$ and $Al^{27} n^1 = Ra-Na^{24} He^4$. It is suggested that the decompns. might occur as follows: $Ra-Na^{24} = Mg^{24} e hv_1$; $Ra-Na^{24} = Na^{23} n^1 hv$. H. A. Smith

High-speed electrons liberated from fluorine after bombardment by neutrons. I. Kurchatov, G. Shepkin and A. Vibe. *Compt. rend. acad. sci. U. R. S. S.* 3, 572-3 (in English 574 5)(1934).--It is assumed that in the bombardment of F by neutrons $F^{19} + n^1 = N^{16} + He^4$. The at. wt. of N^{16} is taken to be 16.0022 = 0.0022 from the data of Harkins, Gans and Newson (*C. A. B.* 28, 1933). According to the general scheme given by Fermi, the isotope N^{16} should disintegrate, emitting an electron and producing a stable isotope of O. To check the suggested scheme of nuclear reactions, exper. were made with neutrons liberated by α -particles of Rn and its decomposition products from Be. The target was LiF. Analysis of the radiation by means of a magnetic field showed that it was mainly a stream of high-speed electrons of the order of $4-5 \times 10^6$ e. v. It is concluded that the reaction $O^{16} + n^1 = N^{16} + He^4$ is impossible from energy considerations even for high-speed neutrons.

Allen S. Smith

ASD 55.4 METALLURGICAL LITERATURE CLASSIFICATION

The radioactivity of He^3 . I. V. Kurchatov, K. D. Sinelnikov, G. Shchepkin and A. Vebe. Physik. Z. Sowjetunion 5, 922-6 (1934).- From energy considerations the decompn. of He^3 into H^3 and a positron is possible. The authors however, find no positron emission and conclude that the above disintegration is highly improbable or that the period of decay is at least about 3 years, an unlikely value

SHCHEPKIN, G.

Dispersion of slow neutrons by hydrogen. M. Eremeev, I. Kurchatov and G. Shchepkin.
J. Exptl. Theoret. Phys. (U.S.S.R.) 5, 355-9 (1935).- The collision radius for very
slow neutrons with protons as detd. from the mean free paths by collision in aq. soln.
is about 2×10^{-12} cm. F. H. Rathmann

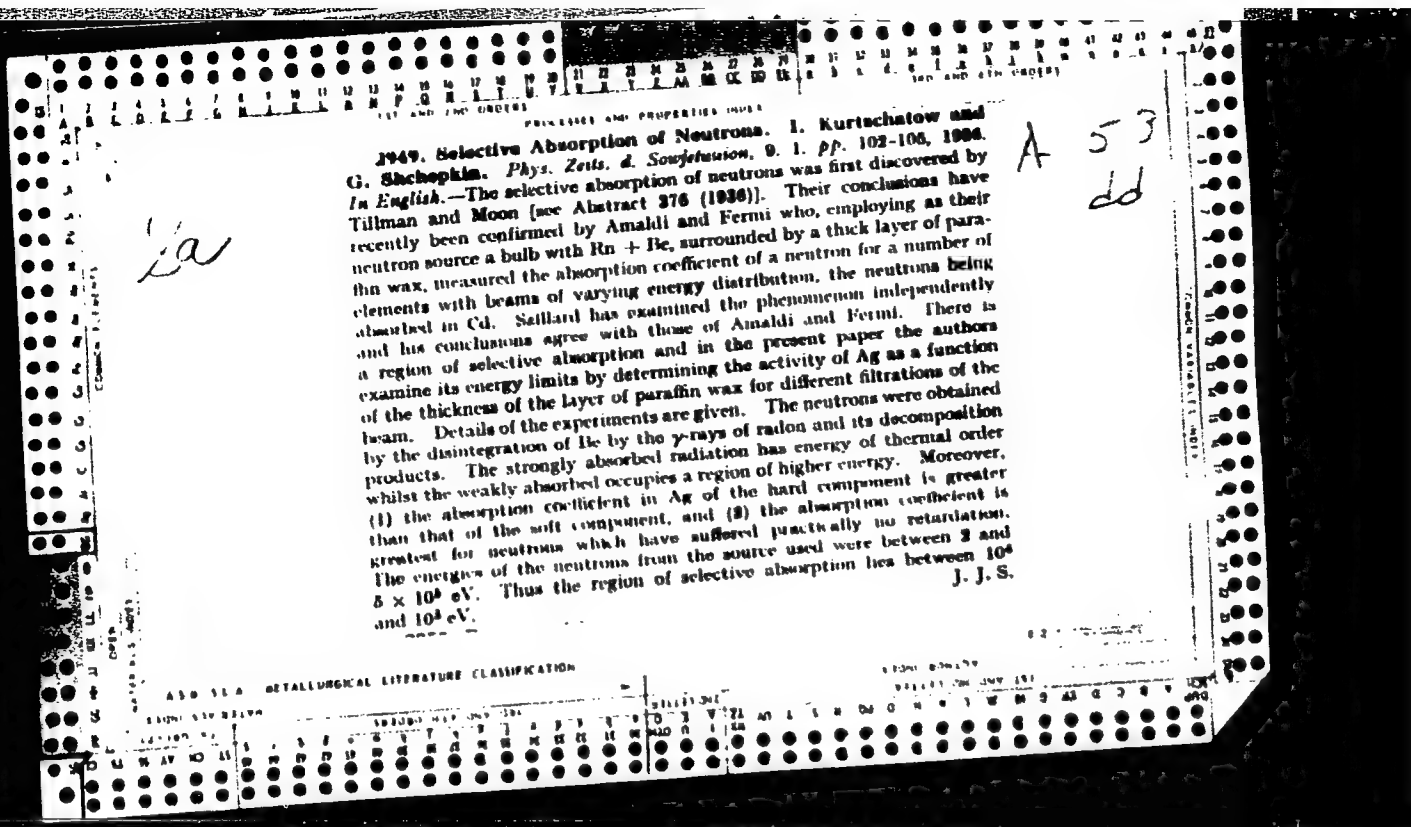
SHCHEPKIN, G.

The energy of neutrons and the Fermi effect. I. Kurchatov, L. Mulsovskiy, M. Eremeev and G. Shchepkin. Physik. Z. Sowjetunion 7, 257-61 (1935).- The radioactivity of Al, Si, P, Fe, Br, Ag and I excited by neutrons from F and Be was studied. Whenever the nucleus is formed as a result of capture of a neutron without emission of a heavy particle, radioactivity results. Neutrons from F lead to formation of radioactive P.

A.B.F.D.

SHCHEPKIN, G.

Scattering of slow neutrons by hydrogen. M. Ereemeev,
I. Kurchatov and G. Shchepkin. Physik. Z. Sowjetunion 7,
267-73(1935).- A method is described for detg. the mean free
path of neutrons in water. The results are used to calc. the collision
radius of slow neutrons with protons. This is found to be 2×10^{-12} cm.
A. B. F. Duncan



1

ABSORPTION OF THERMAL NEUTRONS IN SILVER AT LOW TEMPERATURES. V. F. Kuznetsov, P. G. Houtermans, I. W. Kurbatov, A. Leipunsky, L. W. Schabinkov, and G. Shepkin (*Fizikal. Zh. Sovetskii*, 1936, 10, (1), 103-106. In German.) Data relating to the absorption of the C-group of neutrons by silver at temperatures between 20-4° and 290° abs. are presented and discussed. J. S. G. T.

ASB SLA METALLURGICAL LITERATURE CLASSIFICATION

Proportional counter of protons. V. Kharov and G. Shepkin. *J. Exptl. Theoret. Phys. (U. S. S. R.)* 9, 1513 (1939).—Description of app. consisting of an argon-filled (20 mm. Hg) ebontite-stoppered, brass cylinder with a 0.9-mm. wire connected to an amplifier through a resistance of $10^9 \Omega$, for counting protons accompanied by an intense γ -radiation. F. H. Rathmann

CA

3

Methods used for studying the scattering of α particles in gases. (G. Ya. Shchepkin and I. M. Khromchenko. *J. Exptl. Theoret. Phys.* (U.S.S.R.) 10, 47 (1940). The scattering of α -particles in gases of light elements was studied in an app. permitting observation of the scattering through 180° , thus decreasing the background due to the Coulomb-scattering. The energy losses of α particles were reduced to min. and the app. was located inside of a solenoid to remove electrons. For A the dependency of the number of α -particles on energy (up to 8.4 m. e. v.) was observed. N gives anomalous dependence with two maxima at 5 and 6 m. e. v., which could be interpreted as due to resonance. Roksalana Gamow

AUTHORS: Artsimovich, L. A., Shchepkin, G. Ya., Zhukov, V. V., 89-12-1/29
Makov, B. N., Maksimov, S. P., Malov, A. F., Nikulichev, A. A.,
Panin, B. V., Brezhnev, B. G.

TITLE: Electromagnetic Isotope Separating Device for Heavy Elements of
High Resolving Power. (Elektromagnitnaya ustanovka s vysokoy ra-
zreshayushchey siloy dlya razdeleniya izotopov tyazhelykh elemen-
tov)

PERIODICAL: Atomnaya Energiya, 1957, Vol. 3, Nr 12, pp. 483-491 (USSR)

ABSTRACT: The constructed apparatus, which shall be able to separate clear-
ly isotopes even with a relative mass difference of $1/240$, must
have a high dispersion, a high resolving power and especially well
stabilized magnetical and electrical fields. An axial-symmetrical
field, the dispersion of which is proportional to the square of
the focusing angle, was used as a magnetic field. The focusing
angle is 225° . The measured dispersion of the apparatus amounts
to 20 mm at a relative mass difference of the masses to be se-
parated of 1%.

The stabilization of the magnetic field of the separating device
has been brought to 0,005% by the aid of a valve scheme. The ac-
celeration velocity for the source of ions (up to 40 kV) is sta-
bilized by a double cascade scheme up to 0,01%. But also the
current in the discharge source of ions is stabilized. The vacuum
chamber is constructed from stainless steel, in a C-shape. The

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Electromagnetic Isotope Separating Device for Heavy Element of 89-12-1/29
High Resolving Power.

160 to 360 for Pu²⁴¹ concentrated from samples of
different isotope compositions

There are 4 tables, 8 figures and 3 Slavic references.

SUBMITTED: August 21, 1957

AVAILABLE: Library of Congress

Card 3/3

ALEKSEYEV, B. A., ZOLOTAREV, V. S., PANIN, V. V., SHCHEPKIN, G. Y. and
CHERNOTOTOV, E. S.

"Electromagnetic Separation of Isotopes of the Rare-Earth Elements."

paper to be presented at 2nd UN Intl. conf. on the peaceful uses of Atomic
Energy, Geneva, 1 - 13 Sep 58.

SHCHEPKIN, G.V., kand. tekhn. nauk

Stress analysis of straight shafts. Izv. vys. ucheb. zav.;
mashinostr. no.3/4:35-42 '58. (MIRA 12:5)

1. Khar'kovskiy politekhnicheskii institut.
(Shafting)

SHC HE PR. N. G. Ya.

76) PEACE - BOOK EXPLOITATION 504/2713
International Conference on the Peaceful Uses of Atomic Energy. 2nd,
Geneva, 1958

Booklet with title: *polucheniye i primeneniye izotopov* (Reports
of Soviet Scientists: Production and Application of Isotopes) Moscow,
Atomizdat, 1959. 308 p. (Series: *Iz. Trudy*, vol. 6) 3,000 copies
printed.

Eds. (title page): G.V. Khryzhanov, Academician, and I.I. Novikov, Correspond-
ing Member, USSR Academy of Sciences; Ed. (inside book): L.D. Anisimov;
Tech. Ed.: L.D. Anisimov.

PURPOSE: This book is intended for scientists, engineers, physicists, and
biologists engaged in the production and application of isotopes, and for
peaceful uses; for professors and students and for the general public.
Higher technical schools, universities, and libraries should have a copy of
this book for their reference and for the general public interested in atomic science and technology.

CONTENT: This is volume 6 of a 6-volume set of reports delivered by Soviet
scientists at the Second International Conference on the Peaceful Uses of
Atomic Energy held in Geneva from September 1 to 13, 1958. Volume 6 con-
tains 13 reports on the use of isotopes in the production of electricity, in
active isotopes and their labeled compounds, in agriculture, in medicine, and
with the aid of isotopes in the field of chemistry, geology, biology, and
building, and agriculture, and 3) University of Leningrad, Leningrad
6 was edited by: S.V. Levin, V.I. Zolotarev, V.V. Zolotarev, V.V. Zolotarev,
Pravukov, Camille de Chemical Sciences; and V.V. Zolotarev, Camille de
Medical Sciences. See Sov/201 for titles of volumes of the set. 2500
copies appear at the end of the articles.

3. Yakovlev, G.M., and V.B. Delev. Means of Developing Remote Control Methods
in the Radiochemical Laboratories of the AN SSSR (Report No. 2005)

4. Walker, M.P., A.G. Zaidovich, A.B. Frenkel, and I.B. Pavlov. Con-
dial Production of Deuterium by the Low-temperature Distillation Method
(Report No. 2025)

5. Gerdtsfeld, I.D., R.Ya. Kucherov, and V.K. Tashkova. Separation of
Isotopes by Diffusion in a Steam Flow (Report No. 2006)

6. Zolotarev, V.D., A.I. Litvin, and Ye.G. Kozar. Separation of Isotopes
on Electromagnetic Units in the Soviet Union (Report No. 2005)

7. Alekseyev, B.A., S.V. Buligin, V.S. Zolotarev, S.V. Padin, Ye.S.
Chernomir, and G.Ya. Shcherbak. Separation of Isotopes of Har-
dard Elements by the Electromagnetic Method (Report No. 2017)

8. Kozlov, P.M., B.M. Makov, M.S. Ioffe, B.D. Brezhnev, and G.M. Pradka.
Ice Source for the Separation of Stable Isotopes (Report No. 2005)

9. Brulin, M.V., and P.M. Morozov. Electric Field Effect in Ion Beams on
Stable Isotope Separation by the Electromagnetic Method (Report No.
2004)

10. Buganova, M.D., P.L. Gruzina, G.I. Yermolayev, and I.D. Nikulinakly.
Use of Radioactive Isotopes in Metallurgical Research (Report No. 2218)

11. Smolonskiy, B.M., V.A. Yemashovskiy, and I.M. Tshar. The Theory and
Practice of Relay-type Instruments Based on Radioactive Isotopes
(Report No. 2232)

12. Zaslavskiy, Ye.S., G.I. Shor, and R.M. Shcherbina. Studying the
Mechanism of Protection of Rubbing Surfaces Against Wear Due to Corro-
sion (Report No. 2198)

13. Bugayev, B.V., and L.M. Matsyuk. The γ -770, Ba155, and Co144 as
Sources of Radiation for Checking Thin-walled Products (Report No. 2235)

14. Bekt, B.I., A.B. Zerkov, and G.I. Kopyris. Studying the Redistrib-
tion of Elements in Metal Alloys and Their Compounds by Autoradiographic
and Radiometric Methods (Report No. 2236)

15. Gruzina, P.L., A.I. Yemashovskiy, V.S. Yemashovskiy, G.D. Rybnova,
G.M. Padinov. Studying the Diffusion and Distribution of Elements in
Alloys of Zirconium and Titanium Alloys by the Radioactive Isotope Method
(Report No. 2228)

21(10), 21(8)

SOV/89-7-3-14/29

AUTHORS: Baranov, S. A., Zelenkov, A. G., Shchepkin, G. Ya.,
Beruchko, V. V., Malov, A. F.

TITLE: A Large α -Spectrometer

PERIODICAL: Atomnaya energiya, 1959. Vol 7, Nr 3, pp 262-264 (USSR)

ABSTRACT: This article is based on of a lecture delivered at the 9. All-Union Congress of Nuclear Spectroscopy (Khar'kov, January 1959). The spectrometer developed belongs to the $\pi\sqrt{2}$ -type, in which, for the purpose of improving light intensity accompanied by a high degree of resolving power, the radius of the central orbit was considerably enlarged (155 cm). The magnet has the shape of a mushroom and is composed of 3 parts: the core, a cylindrical part, and 2 "hats" (photograph attached). The width of the poles is ~ 70 cm, the distance between them is 35 cm, and the total weight is 90 t. Profiled end pieces are fastened to the pole shoes, their form is calculated by means of an analytical method. The operation chamber has a content of ~ 1000 l. Evacuation is brought about by means of a VN-2 forepump. As a high-vacuum pump a VH-54-type unit is used. The operating vacuum amounts to some 10^{-6} torr. It is possible to measure 4 α -active pre-

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A Large α -Spectrometer

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parations successively without the vacuum being influenced. The maximum size of the source is 100 ± 10 mm. Recording of the α -particles is carried out either by means of a proportional counter or by means of thick-layered photo-plates. The magnetic field coils are fed by a selenium rectifier, which is, in turn, connected with a 35 kva motor generator by way of a DN-35 choke. Within the operational range of the device a current of 700-1300 a flows, which corresponds to a field strength of 2.0-3.5 kOe. Stabilization of the magnetic field is described more closely by reference 6. During the measurement the maximum deviation of the magnetic field from the previously adjusted value is less than $2 \cdot 10^{-4}$ in the course of 8 hours of perpetual operation. The topography of field distribution was experimentally investigated with great exactitude. Boundary effects were eliminated in accordance with reference 7. On the basis of the topography it was possible to determine the shape of the diaphragms by which the α -beam is bounded. The maximum utilized solid angle of the device is $8 \cdot 10^{-4}$ of 4π . The half width of the lines amounts to some hundredth parts of a percent. The dispersion of the device for the α -particles of Po^{210} was measured: 1.2 kev/mm. The α -sources may have a weight of up to 100 μ g. Long lived α -radiation sources with a half life of up to $2 \cdot 10^{10}$ a still

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A Large α -Spectrometer

SOV/89-7-3-14/29

give useful measuring results. There are 2 figures and
7 references, 2 of which are Soviet.

SUBMITTED: May 8, 1959

Card 3/3

S/048/59/023/012/001/009
B006/B060

21.5300

AUTHORS: Baranov, S. A., Zelenkov, A. G., Shchepkin, G. Ya.,
Beruchko, V. V., Malov, A. F.

TITLE: A Large α -Spectrometer With Double Focusing

PERIODICAL: Izvestiya Akademii nauk SSSR Seriya fizicheskaya, 1959,
Vol. 23, No. 12, pp. 1402 - 1410

TEXT: The present paper offers a description of an efficient α -spectro-
graph ($\pi\sqrt{2}$ - focusing), devised by the authors for the microscopic
investigation of the α -decay. The magnetic field distribution in the gap
may be approximated by the series $H/H_0 = 1 + a_1\eta + a_2\eta^2 + a_3\eta^3 + \dots$, where

H_0 denotes the field in the central orbit with the curvature radius ρ_0 ;

$\eta = \frac{r - \rho_0}{\rho_0}$. The coefficients of the expansion were chosen to be $a_1 = -1/2$,

$a_2 = 1/8$, $a_3 = 3/16$. ρ_0 was chosen to be 155 cm to allow for the highest
possible resolving power of the device and maximum light intensity. The

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A Large α -Spectrometer With Double Focusing

S/048/59/023/012/001/009
B006/B060

device, weighing 90 t, consists mainly of the magnet with the excitation winding and of the vacuum chamber placed into the gap between the poles. The width between the poles is ~ 70 cm, the gap width between them is 35 cm. Fig. 1 shows a picture of the complete equipment. Fig. 2 shows a cross-section through the magnet. Pressure reduction down to the magnitude of 10^{-6} torr was rendered possible by the connection of the chamber (~ 1000 l) to a forepump of type VN-2 and to a vacuum unit VA-5-4. Fig. 3 shows a cross-section through the complete spectrometer. The sources (maximum dimensions: 100×10 mm) were placed in a special device. Three similar diaphragms served for the limitation of the α -beam. The diaphragms are placed in the central part of the chamber (under angles of 100° , 130° , and 160°), where the beam has the maximum cross-section. The measuring of the α -beam is carried out by means of a proportional counter or by thick-layered photographic plates. Simultaneously a set of plates with a total area of 480×90 mm may be exposed. Fig. 4 shows the supply of the magnet schematically. The water-cooled magnet winding consists of a copper bar (70×10 mm cross-section) and has 53 turns. The working current intensity is $700 - 300$ a, corresponding to a field potential of $2.0 - 3.5$ koe. More

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A Large α -Spectrometer With Double Focusing

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details are given in the connection. Fig. 5 shows a scheme of the system, briefly discussed, for the stabilization of the magnetic field. The H-measurement is carried out by means of the paramagnetic proton resonance. A 0.5% aqueous solution of manganese chloride was used for transmission. The solution filled in a vacuum pocket was directly placed in the magnet gap. The block diagram of the field meter is discussed and shown in Fig. 6. The error of this meter amounts to $1 \cdot 10^{-5}$. The investigation of the magnetic field topography is discussed next. For this purpose two devices were developed, one basing on the signal measurement by means of a ballistic galvanometer, the other basing on a signal compensation. Both devices were very sensitive (~ 0.05 oe/mm). Results may be seen in Fig. 8 and in a table. More accurate data will be supplied in another paper. Finally the ion-optical properties of this device are discussed. Fig. 9 shows the shape of the focal surface. The energy range $\Delta E/E_0$ of the α -particles was $\sim 10\%$ and was simultaneously recorded by photographic plates. The half-width of the lines within the whole range, was ~ 0.07 . The dispersion dE/dx was $\approx 2.28 \cdot 10^{-4} E_0/\text{mm}$. This comes up to $\sim 1.2 \text{ kev mm}^{-1}$ for Po^{210} α -particles. The resolving power of the device is illustrated by the Card 3/4

✓C

A Large α -Spectrometer With Double Focusing S/048/59/023/012/001/009
B006/B060

α -spectrum of Cm^{242} , shown in Fig. 10. Finally the authors thank the following persons for interest and assistance: I. V. Kurchatov, L. A. Artsimovich, V. Z. Bychkov, A. M. Barinov, I. V. Naumov, S. M. Rubchinskiy, M. P. Zel'dovich, V. V. Zhukov, N. N. Semashko, D. V. Pavlov, A. A. Nikulichev, V. M. Kulakov, A. A. Arutyunov, S. N. Belen'kiy, A. I. Timoshinov, A. D. Runov, I. Ya. Leskov, and M. I. Dmitruk. There are 10 figures, 1 table, and 13 references: 6 Soviet.

✓c

Card 4/4

L 3170-66 EWT(m) DIAAP
ACCESSION NR: AT5016964

UR/3154/65/000/002/0047/0070

34
12
B+

AUTHOR: Dmitruk, M. I.; Malov, A. F.; Panin, B. V.; Runov, A. D.; Soldatov, A. F.; Shchepkin, G. Ya.

TITLE: Mass-separation device with magnetic and electric cross-fields intended for the production of pure ($C > 99\%$) rare isotopes of heavy elements

SOURCE: Moscow, Inzhenerno-fizicheskii institut, Fizicheskaya elektronika, no.2, 1965, 47-70

TOPIC TAGS: mass separation, lead isotope, cadmium isotope, rare isotope

ABSTRACT: A two-stage mass separator is described, and the results of separation of lead and cadmium isotopes are reported. An electro-magnetic mass separator described by L. A. Artsimovich, et. al. (Atomnaya energiya, 3, 483, 1957) was used as the first stage; its focusing angle 1.25° was changed to $^\circ V2$. The second stage developed after D. Z. Fischer's device. (Phys., 133, 471, 1952, has electric and magnetic fields of special configurations in the same space; this arrangement permits the focusing of ions separated according to their masses and energies simultaneously with the vertical and horizontal focusing of particles. The design of the second stage, performed on the basis of the general theory of axisymmetrical

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ACCESSION NR: AT5016964

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electric and magnetic cross fields, is reported in detail. From estimates of geometrical characteristics, the dispersion of the mass separator for $Pb^{208} - Pb^{207}$ isotopes was found to be 12.24 mm. A theoretical maximum resolution is 250,000; in practice, however, the resolution was under 1000 for Pb^{204} isotope separation. A Pb^{204} sample isolated by the above mass separator had these concentrations: $C_{Pb^{204}} = 99.6\%$; $C_{Pb^{208}} = 0.6\%$; $C_{Pb^{207}} = 0.06\%$; $C_{Pb^{206}} = 0.18\%$. Allowing for the contamination of the sample by the natural mixture of Pb isotopes at the separator emitter, the sample must have contained 99.99% Pb^{204} , which corresponds to an enrichment ratio of 700,000. A sample of cadmium enriched in the mass separator contained 99.9% Cd^{114} . "In conclusion, the authors wish to thank L. A. Artsimovich for his constant attention and help and also the workers of the Institute of Atomic Energy in I. V. Kurchatov and other organizations who took part in development, building of units, and in assembling and alignment of the outfit: V. Z. Bychkov, D. V. Pavlov, A. A. Nikulichov, N. N. Golubaya, V. F. Gavrilov, P. I. Zdobnikov, Yu. I. Kostyutkin, I. Ya. Lenkov, I. G. Trifonov, Yu. Ye. Pavlov, I. M. Averin-Lavrov, S. M. Naftulin, V. I. Volosnev, S. I. Zykov, N. M. Bakanova, N. D. Ivanova, G. N. Kysa, and also the group of workers directed by A. A. Dolgij, V. F. Karpov, and G. A. Khomyachkov." Orig. art. has: 6 figures and 40 formulas.

[03]

ASSOCIATION: none

Card 2, 3

L 3170-66

ACCESSION NR: AT5016964

SUBMITTED: 00

ENCL: 00

SUB CODE: NF

NO REF SV: 002

OTHER: 002

ATD PRESS:
4035

Cord 3/3 *nd*

L 39484-65 EWT(1) IJP(c)

ACCESSION NR: AP5004954

S/0286/65/000/002/0056/0057

AUTHORS: Baranov, S. A.; Malov, A. F.; Polevoy, R. M.; Shchepkin, G. Ya.

TITLE: Magnetic charged particle spectrometer. Class 42, No. 167649

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 2, 1965, 56-57

TOPIC TAGS: spectrometer, particle spectroscopy

ABSTRACT: This Author Certificate presents a magnetic charged particle spectrometer with double focusing of the beam in a transverse axially symmetric magnetic field. The spectrometer contains a source and a detector of charged particles located in a vacuum chamber which is placed between the magnet poles. To increase the radiant emittance and dispersion of the device, the beam focusing is accomplished in an angle greater than 360° (see Fig. 1 on the Enclosure). To eliminate the incidence at the particle detector of "background" particles in the first loop of the beam trajectory, a system of diaphragms is placed in the vacuum chamber. Orig. art. has: 1 diagram.

ASSOCIATION: Institut atomnoy energii im. I. V. Kurchatova (Atomic Energy Institute)

SUBMITTED: 25Dec63

ENCL: 01

SUB CODE: NP

NO REF. SOV: 000

OTHER: 000

Card 1/2

89860

S/169/61/000/003/018/022
A005/A005

9.9/20(2603, 1041, 1046)

Translation from: Referativnyy zhurnal, Geofizika, 1961, No. 3, p. 34, # 3G290

AUTHOR: Shchepkin, L. A.

TITLE: On the Problem of Ion Formation at the Maximum of Electronic Density of the F2-Layer

PERIODICAL: Tr. Sibirsk. fiz.-tekhn. in-ta pri Tomskom un-te, 1959, No. 37, pp. 49-56

TEXT: The problem of the relative position of the levels of maximum electron density h_m and maximum ionformation h_I is of great importance for the study of the ionization dynamics of the F2-layer. The diurnal course of the magnitude of the difference $h_m - h_I$ is estimated for the summer season at Irkutsk for average median $h_p F2$ for 1948-1960 and 1951-1954 under the assumption that h_I coincides with h_m in morning when a sharp decrease of the altitude h_m and a rapid increase in $f_o F2$ are observed, and that h_I is determined according to the theory of the simple layer. The intensity of ion formation I at the h_m level is almost inchangeable by day after rapid increase in morning. The ratio I/I_o (I for the position of Sun in the zenith) amounts by day to about $1/3$ and changes in time and season of year.

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89800

S/169/61/000/003/018/022
A005/A005

On the Problem of Ion Formation at the Maximum of Electronic Density of the F2-Layer

The recombination coefficients at the h_m level are calculated from the obtained values of I/I_0 and the given value of I_0 . The obtained differences $h_m - h_I$ permitted the estimation of magnitude and speed direction of the vertical drift v of the electron gas under defined assumptions; the calculations are carried out with the Martin formulae with respect to the observations in the summer season at Irkutsk. For the value $\partial\alpha/\partial z \approx 1.10^{-10}$, the drift speed has a maximum and is directed upwards at 07 o'clock of local time, and a maximum with the direction downwards at 18 o'clock; the minimum speed takes place by about midday and about midnight. The maximum value is $v \sim 10$ and 14 m/sec respectively, for years near to the maximum (1948 - 1950) and the minimum (1951 - 1954) of solar activity. By day is $v \sim 5$ m/sec and changes in direction at about midday.

L. Shch.

Translator's note: This is the full translation of the original Russian abstract.

Card 2/2

89799

3/169/51/000,003/017/022
A005/A005

Perturbations in the F2-Layer According to Observations at Irkutsk

of $|\Delta t|$ in such a manner that it has a maximum in winter by night. The diurnal course of $|\Delta h|$ has a maximum in summer by day, in winter by night. The quantity $|\Delta h|$ has a maximum in summer. The diurnal course of $|\Delta f|$ does not change in shape at the transition from stable to magnetically disturbed days. The statistical regularities are individually considered for positive and negative Δf and Δh . The diurnal course of the positive Δf has by magnetically disturbed days a complicated structure and a relatively small amplitude; the negative Δf has a maximum about in midday and little change at the transition hours with a decrease in f_oF2 and inversely. In magnetically disturbed hours, $h'F2$ always increases whereas this effect has a maximum by night for $\Delta f < 0$, and by day for $\Delta f > 0$. Some other statistical regularities of the magnitudes Δh and Δf are also studied. A phase shift between the disturbance indices of the magnetic and ionospheric characteristics is discovered. The maximum effect of the magnetic disturbance becomes apparent at Δh through 6-12 hours after the disturbance. From the analysis of the obtained regularities it is concluded that one can consider the negative perturbations f_oF2 as a peculiar magnification of effects which are analogous to those which cause the anomalies of the F2-layer in summer. The

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89799

S/169/61/000/003/017/022
A005/A005

Perturbations in the F2-Layer According to Observations at Irkutsk

possible variation in intensity of the ionizing agent δI_o is estimatec. By a summer day is $\delta I_o > 0$ for $\Delta f < 0$. In winter δI_o agrees in sign with Δf .

L. Shchepkin

Translator's note: This is the full translation of the original Russian abstract.

X

Card 3/3

POLOV, V.R.; SHCHERBIN, L.A.

Some characteristics of the behavior of F2 and F1 ionospheric
layers over Irkutsk. Geomag. i aer. i no.3:374-378 My-Je '61.
(MIRA 14:9)

1. Irkutskiy gosudarstvennyy universitet, kafedra radiofiziki.
(Ionosphere)

3.5/30

9.9/10

39107
S/169/62/000/006/091/093
D228/D304

AUTHOR: Shekhpina, L. A.

TITLE: Peculiarities of ion formation in the ionosphere's
E-region and anomalies in the composite F-layer

PERIODICAL: Referativnyi zhurnal, Geofizika, no. 6, 1962, 34, ab-
stract 6G184 (V sb. Ionosfern. issledovaniya, no. 6,
M., AN SSSR, 1961, 9-16)

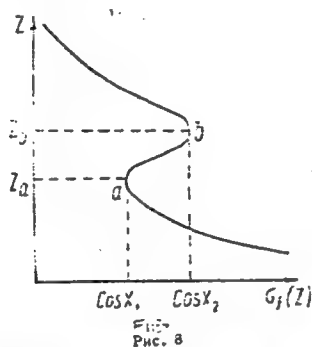
NOTE: Data on the atmosphere's structure obtained in recent years
indicate that the altitude temperature gradient (T) of gas decrea-
ses sharply, and that a maximum for T may exist at a level of ~200
km. In this context the problem arises of investigating the height-
time change in the ion-formation intensity I when the gradient T is
variable (with respect to the height). Analyzing the extreme of the
function $I(z)$ leads to the conclusion that it is possible for two
 I_{\max} , with $\cos \chi_1 \sim \cos \chi_2 < \cos \chi_2$ to exist under certain conditions.
The I_{\max} levels are disposed above and below the height interval

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39197
S/169/62/000/006/091/093
5228/5304

Peculiarities of ion ...

(z_0, z_1) in which the ratio $n^2/(dn/dz)$ increases (n being the concentration of ionizable gas). When there is gravitational equilibrium and a full diffusion separation of gases, the condition for the existence of such a height interval has the form: $d^2H/dz^2 > (1 + dn/dz)/H$, where H is the height of the homogeneous atmosphere for ionizable gas. If $\cos \chi < \cos \chi_1$ (see Fig. 8) there is one I_{\max}



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39107

S/169/62/000/006/091/093

D228/D304

Peculiarities of ion ...

above z_0 . When $\cos \chi_1 = \cos \chi_2$ on the lower z_0 level the bend $I(z)$ forms, and this bend develops into a maximum of $\cos \chi > \cos \chi_1$. When $\cos \chi_1 = \cos \chi_2$ the upper maximum degenerates into a bend, and if $\cos \chi_1 < \cos \chi_2$ one lower maximum remains, below z_0 . A scheme is given for the development of the profile of $I(z)$ in time (with the growth of $\cos \chi$); this is derived on the basis of a series of calculations for hypothetical $n(z)$, corresponding to the conditions cited above. The results obtained allow the seasonal changes in the conditions of F1- and F2-layer formation to be explained. For this it is supposed that $\cos \chi_1 < \cos \chi_2$ in winter throughout the day, that $\cos \chi_1 = \cos \chi_2$ in the equinoxial season around noon, and that $\cos \chi_1 > \cos \chi_2$ on a summer day. In particular, it is possible to explain the anomalous seasonal variation of f_oF2 with two maxima and the conditions for the F1-layer's appearance in different seasons. [Abstracter's note: Complete translation.]

Card 3/3

SECHEPKIN, L.A.

Atmospheric structure at different levels in the lower part of the F region of the ionosphere and characteristics of the complex F layer. Geomag. i aer. 1 no.4:540-547 J1-Ag '61. (MIRA 14:12)

1. Irkutskiy gosudarstvennyy universitet imeni A.A. Zhdanova.
(Ionosphere)

SHCHEPKIN, L.A.

Some specific features of cyclic changes of the F₁ layer over
Irkutsk. Geomag. i aer. 1 no.4:619-620 JI-Ag '61. (MIRA 14:12)

1. Irkutskiy gosudarstvennyy universitet imeni A.A. Zhdanova,
kafedra radiofiziki.
(Ionosphere)

42140

S/203/62/002/002/016/017
I046/I246

AUTHOR: Shchepkin, L.A.

TITLE: Geographical distribution of the F2 region critical frequencies in low latitudes

PERIODICAL: Geomagnetizm i aeronomiya, v.2, no. 2, 1962, 365-366

TEXT: The variation with the latitude in the daily behaviour of F_oF_2 (critical frequencies of the F2 region) in winter is explained by reversible changes in the formation mechanism of the F2 -maximum (viz., formation of the F2-maximum according to the simple-layer theory, and its formation independently of the ionization-intensity maximum) taking place at time intervals spaced symmetrically with respect to the noon. In higher latitudes (in the winter hemisphere), the direct and the reverse changes, and also the two coincident f_oF_2 maxima, occur closer and closer to midday; at a definite latitude, the change in the formation mechanism occurs at noon only, and the two f_oF_2 maxima merge at this latitude into one large peak. There is 1 figure.

ASSOCIATION: Institut zemnogo magnetizma, ionosfery i rasprostraneniya radiovoln
Ak SSSR (Institute of the Terrestrial Magnetism, the Ionosphere and
Propagation of Radiowaves AS USSR)

Card 1/2

S/203/62/002/002/016/017
I046/I246

SUBMITTED: January 26, 1962

Card 2/2

SHCHEPKIN, L.A.

Geographic distribution of the critical frequencies of the F_2
layer at low latitudes. Geomag. i aer. 2 no.2:365-367 Mr-Apr '62.
(MIRA 15:6)

1. Institut zemnogo magnetizma, ionosfery i rasprostraneniya
radiovoln Sibirskogo otdeleniya AN SSSR.
(Ionosphere)

SHCHEPKIN, L.A.

Relationship between the latitude and the conditions for the appearance of the F₁-layer. Geomag. i aer. 3 no.1:173-174 Ja-F '63. (MIRA 16:4)

1. Institut zemnogo magnetizma, ionosfery i rasprostraneniya radiovoln Sibirskogo otdeleniya AN SSSR.

(Ionosphere)

ACCESSION NR: AP4001828

S/0203/63/003/006/1053/1058

AUTHOR: Shchepkin, I. A.

TITLE: Latitudinal variation in the conditions for occurrence of the F₁ layer

SOURCE: Geomagnetizm i aeronomiya, v. 3, no. 6, 1963, 1053-1058

TOPIC TAGS: F1 layer, F1 layer occurrence, latitudinal variation, high solar activity, solstice, solar elevation, latitude effect, ionosphere, ionization, ionizing radiation, photoionization, F zone ionization, ionospheric F1 layer, quasimonochromatic radiation, atomic oxygen ionization, solar disturbance, astronomy

ABSTRACT: The latitude variation has been studied as a condition for the F1 layer occurrence during high solar activity. The frequency of observations is denoted by ν and monthly observations are summed up by the characteristic parameter

$$S = \int_0^{2\pi} \nu dt, \quad (1).$$

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ACCESSION NR: AP4001828

Plots are given for S and r as a function of the latitude from data accumulated during the 1957-59 period, ($r = S_{\text{clear}}/S$). The probability of an F1 layer occurrence at low solar altitudes from the horizon is shown to increase by an increase in latitude. The cosine of the solar zenith angle decreases with an increase in latitude, and a maximum value of this parameter is observed at latitude 20° in the summer hemisphere. It is shown that this latitude dependence of F1 may be due to the ratio n_1^2/n_1' and n_2/n_1 on the minimum level of the function $F_1 z$ (ratio of molecular nitrogen to atomic oxygen). This function is related approximately to the cosine of the solar zenith angle $\cos x_1 \approx 1/f(x_1)$

$$1/f(x) = \sigma_1 f_1(z) \left(1 + \sum_l \frac{\sigma_l}{\sigma_1} \frac{n_l}{n_1} \right) \equiv \sigma_1 F_1(z); \quad f_1(z) = -n/n_1' \quad (2).$$

"The author is grateful to L. N. Sokolova and L. S. Ly*senok for their help."
Orig. art. has: 6 figures, 4 equations, and 1 table.

ASSOCIATION: Institut zemnogo magnetizma, ionosfery* i rasprostraneniya radiovoln
SO AN SSSR (Institute of Terrestrial Magnetism, Ionosphere, and Radio Wave
Propagation SO AN SSSR)

Card 2/32

Sub 6 May 63

SHCHERBIN, L.A.

Latitudinal change in the diurnal variation of the frequency of appearance of the F_1 layer. Geomagn. i aer. 4 no.1:185-187 Ja'F '64. (MIRA 17:2)

1. Institut zemnogo magnetizma, ionosfery i rasprostraneniya radiovoln Sibirskogo otdeleniya AN SSSR.

L 0000-00 EW 100000 00/00

ACC NR: AT6027210

SOURCE CODE: UR/0000/66/000/000/0017/0019

AUTHOR: Shchepkin, L. A.

ORG: none

TITLE: Latitudinal and cyclical variations of the conditions of F sub 1 layer appearance in its seasonal development

SOURCE: AN SSSR. Sibirskoye otdeleniye. Sibirskiy institut zemnogo magnetizma, ionosfery i rasprostraneniya radiovoln. Issledovaniya po geomagnetizmu i aeronomii (Studies in geomagnetism and aeronomy). Moscow, izd-vo Nauka, 1966, 17-19

TOPIC TAGS: atmospheric ionization, solar radiation, solar activity

ABSTRACT: The same author in another paper [3] estimated the rate of ion formation at heights from 150 to 300 km in the 180—911-Å spectral range, using data collected by G. M. Nikol'skiy on the intensity of solar-ionizing radiation during high activity. The model of the atmosphere used by the author and the intensity of ionizing radiation were selected for conditions of maximum solar activity. Both the model of the atmosphere developed by Shchepkin and the values obtained for the rate of ion formation are then used to estimate electron concentrations for cases involving different rates of ion-exchange and dissociative recombination reactions. In the

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ACC NR: AT6027210

model the atmosphere at 300 km is considered to consist of three components: molecular nitrogen, atomic oxygen, and molecular oxygen. The density and molecular weight of the model atmosphere are taken from the U. S. Standard Atmosphere, 1962. Computations show that the rate of ion formation of O^+ has a maximum at 180 km, while the rates of the other components reach their maxima at 150 km. Satisfactory estimates of the electron concentrations are obtained when the rate of ion-exchange reaction is taken as $3 \times 10^{-12} \text{ cm}^3 \cdot \text{cm}^{-1}$, and the rate of dissociative recombination reaction is taken as $5 \times 10^{-8} \text{ cm}^3 \cdot \text{cm}^{-1}$. Orig. art. has: 2 figures. [ATD PRESS: 5064-F]

SUB CODE: 04, 03 / SUBM DATE: 25Dec65 / ORIG REF: 002 / OTH REF: 001

fv

Card 2/2

ACC NR: AT6027211

SOURCE CODE: UR/0000/66/000/000/0020/0027

AUTHOR: Shchepkin, L. A.

ORG: none

TITLE: Estimates of the rates of ion formation and the parameters of recombination processes in the lower part of the F region of the ionosphere ✓

SOURCE: AN SSSR. Sibirskoye otdeleniye. Sibirskiy institut zemnogo magnetizma, ionosfery i rasprostraneniya radiovoln. Issledovaniya po geomagnetizmu i aeronomii (Studies in geomagnetism and aeronomy). Moscow, Izd-vo Nauka, 1966, 20-27

TOPIC TAGS: ionosphere, solar activity, sunspot

ABSTRACT: L. A. Shchepkin [2] has investigated the latitudinal and cyclical conditions associated with the appearance of the F₁ layer during periods of high solar activity. The cosine of the zenith angle of the sun (cos x), characterizing the onset and end of the regular appearance of the F₁ layer at noon, is used as an index of the conditions of F₁ layer appearance. The author then plots the cos x values against the Wolf number for sunspot appearance. A direct correlation is found to exist between the cos x values and the mean monthly sunspot numbers. The value of cos x is also seen to decrease with latitude, indicating that the conditions for the formation of the F₁ layer improve with an increase in latitude. The author thanks V. F. Rudenko for doing a considerable number of the calculations. Orig. art. has: 3 tables and 23 formulas. [ATD PRESS: 5064-F]

SUB CODE: 04, 03 / SUBM DATE: 25Dec65 / ORIG REF: 006 / OTH REF: 007

Card 1/1

USSR / Farm Animals. Swine

Q

Abs Jour: Ref Zhur-Biol., No 5, 1958, 21486

Author : Shchepkin M. P.

Inst :

Title : The Farrowing Period and the Technique of Its Management (Sroki i sistema provedeniya oporosov)

Orig Pub: Tr. Novocherkasskogo zootekhn.-vet. in-ta, 1957, vyp. 10, 75-87

Abstract: The experiences of sovkozoes and kolkhozoes in seasonal rotation, all-year-around rotation, and all-year-around non-rotational farrowings are summed up. Likewise, the data concerning the effectiveness of different systems and time of farrowings, studied from statistical and zootechnical materials available in a number of sovkhoezes, are given. Under conditions prevailing in Severo-Kavkazskiy Kray, it is recommended

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SHCHEPKIN, N.G.

42636. Vliyaniye Anoksiemii Na Gazovyyobmen, Vakratnyy Kislorod I Okislitel'nyy Koefitsiyent Mochi--Pri Uchastii A.I. Ponomarevoy. Byulleten' Eksperim Biologii I Meditsiny, 1948, No. 12, S. 423-27.

SHCHEPKIN, N.G.; MAKARYCHEV, A.I.

Changes in gas exchange and gastric secretion during various functional conditions of the cerebral cortex in dogs. Biul. eksp. biol. med. 47 no.5:23-28 My '59. (MIRA 12:7)

1. Iz kafedry normal'noy fiziologii (zav. - prof. P.K. Anokhin) i Moskovskogo ordena Lenina meditsinskogo instituta imeni I.M. Sechenova. Predstavlena deystvitel'nym chlenom AMN SSSR P. K. Anokhinym.

(RESPIRATION, physiol.

eff. of conditioned reflexes on oxygen requirements (Rus))

(GASTRIC JUICE,

secretion, eff. of conditioned reflexes (Rus))

(REFLEX, CONDITIONED,

eff, on gastric secretion & oxygen requirement (Rus))

SHCHEPKIN, N. V.

MAZUROV, D.Ya., inzhener; SHCHEPKIN, N.V.

[The road to increased production; experience of the Belgorod cement manufacturers] Po puti sovershenstvovaniia proizvodstva; iz opyta belgorodskikh tsementnikov. [Sostaviteli broshiury, a takzhe avtory vvodnoi stat'i D.IA. Mazurov i N.V.Shchepkin.] Moskva, Gos. izd-vo lit-ry po stroit. materialam, 1954. 77p. (MLRA 7:7)
(Belgorod--Cement industries)

~~SECRET~~
KHOLIN, I.I., kand.tekhn.nauk, otv.red.; LEVMAN, B.S., red.; LOGINOV,
Z.I., kand.ekonom.nauk, red.; LYUSOV, A.N., nauchnyy sotrudnik,
red.; SHCHEPKIN, N.V., red.; KUZNETSOV, P.V., red.; PONOMAREVA,
A.A., tekhn.red.

[Resources of the cement industry of the U.S.S.R.; based on
data from the seminar of workers of the cement industry] Rezervy
tsementnoi promyshlennosti SSSR; po materialam seminarov rabotni-
kov tsementnoi promyshlennosti. Moskva, Gosplanizdat, 1959.
199 p. (MIRA 13:3)

1. Moscow. Gosudarstvennyy vsesoyuznyy nauchno-issledovatel'skiy
institut tsementnoy promyshlennosti. 2. Direktor Gosudarstvennogo
vsesoyuznogo nauchno-issledovatel'skogo instituta tsementnoy
promyshlennosti (NIItsement) (for Kholin). 3. Gosudarstvennyy vse-
soyuznyy nauchno-issledovatel'skiy institut tsementnoy promyshlen-
nosti (NIItsement) (for Loginov, Lyusov).
(Cement industries)

ca 10

Apparatus for the continuous production of 2-furaldehyde. S. I. Shchepkin. Russ. 35,185, Mar. 31, 1934. Construction details.

ASM S.L.A. METALLURGICAL LITERATURE CLASSIFICATION

SHCHAPKIN, S. I.

Kontrol'no-izmeritel'nye i reguliruiushchie pribory v khimicheskikh proizvodstvakh.
Moskva, Gos. nauch. -tekhn. izd-vo khim. lit-ry, 1945. 430 p diagrs.

Controlling, measuring and regulating instruments in chemical engineering.

DLC: TF157.24

SO: Manufacturing and Mechanical Engineering in the Soviet Union, Library of Congress,
1953.

IL'YEVICH, A.P.; SHCHEPKIN, S.I., zasluzhennyy deyatel' nauki i tekhniki: RSFSR, professor, redaktor; GRINBERG, I.F., redaktor; PANOVA, L.Ya., tekhnicheskiiy redaktor.

[Machinery for ceramic and glass factories] Mekhanicheskoe oborudovanie keramicheskikh i stekol'nykh zavodov. Pod red. S.I.Shchepkina. Moskva, Gos. izd-vo lit-ry po stroit. materialam, 1952.

675 p.

(MLRA 7:7)

(Glass manufacture) (Ceramic industries)

SOKOLOV, V.I., doktor tekhnicheskikh nauk, professor; SHKOROPAD, D.Ye., inzhener; ZHIGALOV, S.F., doktor tekhnicheskikh nauk, professor, retsenzent; SHCHEPKIN, S.I., professor, redaktor; MODEL, B.I., tekhnicheskiiy redaktor.

[Automatic and continuous centrifuges] Avtomaticheskie i nepreryvno-deistvuyushchie tsentrifugi. Moskva, Gos. nauchno-tekhn. izd-vo mashinostroit. i sudostroit. lit-ry, 1954. 341 p. (MLBA 7:11)
(Centrifuges)

MCHEPKIN, S. I.

S. I. Shchepkin, M. S. Slobodkin, and V. V. Aronovich, Armatura zapornaya i reguliruyushchaya [Sealing and Regulating Fittings], Mashgiz, 16 sheets

The booklet describes the design of various types of pipe fittings utilized by enterprises in processing liquids and gases, giving special attention to fixtures which are utilized as control mechanisms in automatic regulation systems, and for remote control of Production processes. The booklet also includes some data on calculation of the durability of the fitting and the technology of its production.

The booklet is intended for technical engineering workers connected with the application of pipeline fittings.

SO: U-6172, 12 Nov 1974

See III. 1. 1. 1.
ANDERS, Vasilii Rudol'fovich; SHCHEPKIN, S.I., prof., retsenzent; NEMTSOV,
N.Yu., kand.tekhn.nauk, retsenzent; GOR'KOVA, A.A., vedushchiy red.;
TROFIMOV, A.V., tekhn.red.

[Control and measuring devices; introductory course] Kontrol'no-
izmeritel'nye pribory; vvodnyi kurs. Moskva, Gos.nauchno-tekhn.
izd-vo nef't.i gorno-toplivnoi lit-ry, 1958. 143 p. (MIRA 11:1)
(Measuring instruments)

SHORIN, S.N., doktor tekhn. nauk, prof., red.; SHCHEPKIN, S.I., zasl. deyatel' nauki i tekhniki, prof., otv. red.; LASTOVTSSEV, A.M., prof. red.; KARAVAYEV, N.M., prof., red.; KOKOREV, D.T., prof., red.; PETROKAS, L.V., prof., red.; RESHCHIKOV, P.M., dots., red.; SOKOLOV, S.N., prof., red.; SOKOLOV, S.I., prof., red.; KHODZHAYEV, A.M., dots., red.; LEBEDEV, K.I., kand. tekhn. nauk, dots. red.; TAIROVA, A.L., red. izd-va; UVAROVA, A.F., tekhn. red.

[Investigation and calculation of heat engineering and power generating processes] Issledovaniia i raschety teploenergeticheskikh i energo-khimicheskikh protsessov; sbornik statei. Pod red. S.N.Shorina. Moskva, Gos. nauchno-tekhn. izd-vo mashinostroit. lit-ry, 1961. 137 p. (MIRA 14:10)

1. Moscow. Institut khimicheskogo mashinostroyeniya.
(Heat engineering) (Power engineering)

SHCHEPKIN, S. I.

PHASE I BOOK EXPLOITATION

SOV/5896

Kulakov, Mikhail Vasil'yevich, and Sergey Ivanovich Shchepkin

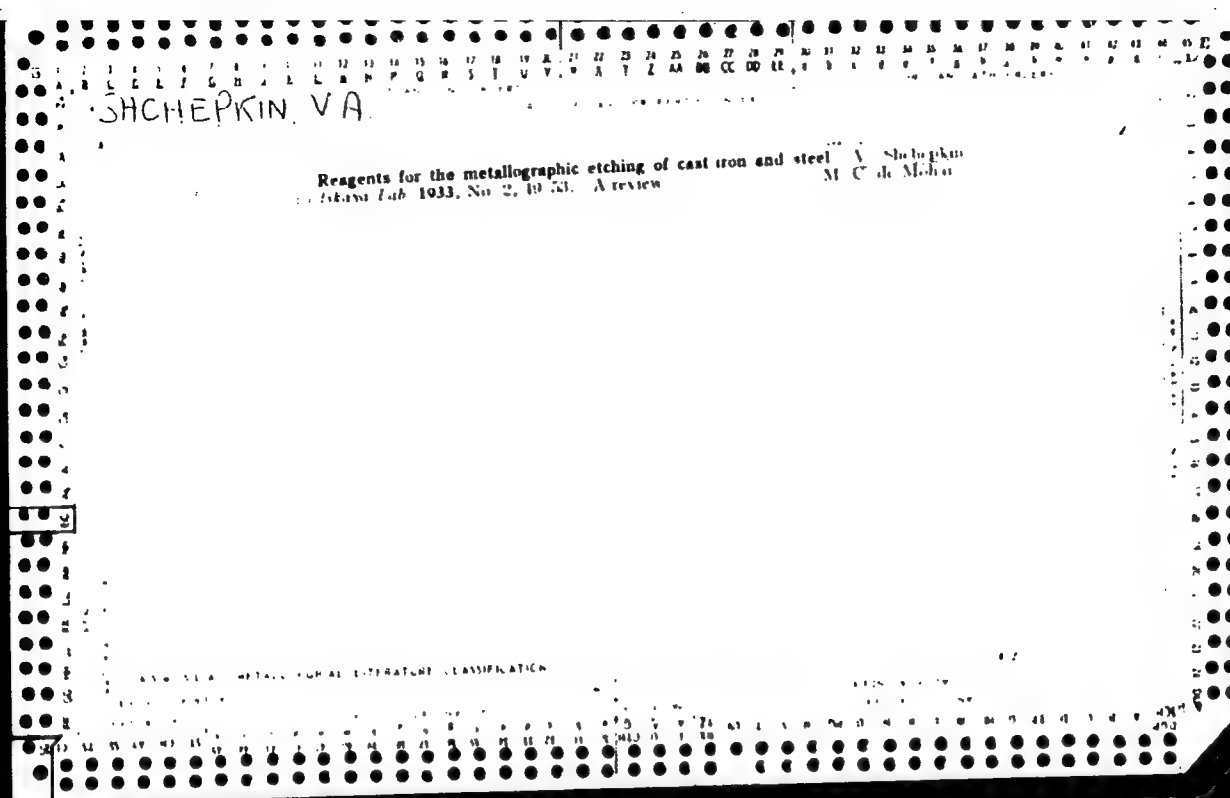
Avtomaticheskiye kontrol'no-izmeritel'nyye pribory dlya khimicheskikh proizvodstv
(Automatic Control and Measuring Instruments for the Chemical Industries)
Moscow, Mashgiz, 1961. 552 p. Errata slip inserted. 15,000 copies printed.

Reviewers: V. P. Malyshev, Candidate of Technical Sciences, and V. P. Anders,
Engineer; Ed.: S. I. Mordovskiy, Candidate of Technical Sciences; Ed. of
Publishing House: A. L. Tairova; Tech. Eds.: A. F. Uvarova and Z. I.
Chernova; Managing Ed. for Literature on Chemical and Textile Machine Building:
V. I. Rybakova, Engineer.

PURPOSE: This book is intended as a handbook for chemical engineers and as a
textbook for students.

COVERAGE: The book deals with methods of automatic control and with the operating
principles, designs, and advantages and disadvantages of the most widely used
measuring devices in the Soviet chemical industry. Problems connected with the
installation, checking (or calibration), and operation of these devices are
discussed. Fundamental data are given on automatic control devices which are

Card 1/7



VOLOSHINOV, B.S., inzhener; SHCHUPKIN, V.A., inzhener.

InUMZ planetary reduction gears. Vest.mash. 36 no.11:8-12 N'56.
(MIRA 10:1)

(Gearing)

WILSON, W.V.; WILSON, W.V.; WILSON, D.A.

Drive for a blast furnace charge distributor. Incl. TUNING.
no.5:44-46 '61. (Incl 14:10)
(Blast furnaces--Equipment and supplies)

SHCHEPKIN, V.S.

Homemade solar water heater. Politekh. obuch. no.8:74-75 Ag '58.
(MIRA 11:9)

1.Shkola No.1, Volodarsk.
(Solar water heaters)

SHCHEPKIN, VLADIMIR VYACHESLAVOVICH

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912.741
.S5

SHCHEPKIN, VLADIMIR VYACHESLAVOVICH.

ANGLO-RUSSKIY SLOVAR' PO SVARKE I REZKE METALLOV (ENGLISH-RUSSIAN GLOSSARY OF
TERMS RELATING TO WELDING AND CUTTING OF **METALS**) MOSKVA, ONTI NKTP SSSR, 1935

164 P. DIAGRS. (BOL'SHAYA TEKHNIЧЕСКАЯ ENTSIKLOPEDIYA, OTDEL SLOVAREY,
VYP. 1)

ADDED T.P. IN ENGLISH.

BIBLIOGRAPHY: P. (6-7)

ACC NR: AP6032288

SOURCE CODE: UR/0106/66/000/009/0018/0023

AUTHOR: Shakhtarin, B. I.; Shchepkin, Yu. N.

ORG: none

TITLE: An experimental study of fluctuation noise effects on phase-lock frequency control

SOURCE: Elektrosvyaz', no. 9, 1966, 18-23

TOPIC TAGS: frequency control, phase measurement, *PHASE SHIFT ANALYSIS*

ABSTRACT: An experimental method for determining the error signal probability density and correlation coefficient caused by fluctuation noise in a phase-lock frequency control system is described. An experimental set-up measures error signal distribution, occurrence frequency of phase jitter, the mean fluctuation frequency of the error signal, and jitter time duration. A digital phase meter with linear characteristics of $-\pi$ to $+\pi$ radians with a recorder of random phase disturbance is part of the setup; it consists of a delay circuit, a sawtooth generator, and an oscillograph. The delay circuit, driven by pulses derived from a reference oscillator, controls the input to the sawtooth generator. The output of the sawtooth generator is fed to the vertical input of the oscillograph. A second output from the reference oscillator is fed into the horizontal input of the oscillograph through the phase-lock system and a pulse-shaping circuit. The error signal is displayed on the oscillo-

Card 1/2

UDC: 621.396.668

GALEYEVA, A.Sh.; SHCHEPKIN, Yu.P.

Petrified fetus developing in the abdominal cavity following rupture
of a supplementary horn of the uterus. Zdrav. Kazakh. 21 no.2:69-
70 '61. (MIRA 14:3)

1. Iz Dzhambul'skoy oblastnoy bol'nitsy.
(LITHOPEDION)

CHULANOVSKIY, V.M.; BULANIN, M.O.; DENISOV, G.S.; SHUVALOVA, Ye.V.; SHCHEPKINA,
D.N.

Allowance for the effect of a solvent on the infrared spectrum of a
substance in analytical work. Izv. AN SSSR. Ser. fiz. 26 no.10:1230-1236
0 '62. (MIRA 15:10)

(Spectrum, Infrared) (Solvents)

POBEDIN, I.S.; TRET'HAKOV, A.V.; SHCHEPNINA, L.V.; REVUNOV, V.A.

Investigating the operation of rotary slitting shears.
Prokat. proizv. no.2:30-43 '60. (MIRA 14:11)
(Rolling mills--Equipment and supplies)
(Shears(Machine tools))

SOV/180-59-4-18/48

AUTHOR: Shchepkina, L.Ya. (Moscow)

TITLE: Magnets of Barium-Oxide Ferrite

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh nauk, Metallurgiya i toplivo, 1959, Nr 4, pp 111-113 (USSR)

ABSTRACT: The author discusses briefly the properties, advantages and possible applications of barium-oxide ferrite (approximately $BaO \cdot 6Fe_2O_3$) magnets. Her own experiments were carried out with magnets prepared from a mixture of barium nitrate with iron nitrate or ferric oxide (grade ChDA). The mixture was briquetted and calcined at $1160^\circ C$, the briquettes being ground. Size grading of the powder was difficult to control (mainly because of adhesion of particles below 20 microns) but had an important effect on the properties of the magnets made by sintering the powder mixed with paraffin at 1140 to $1220^\circ C$. The magnetic properties in relation to sintering temperature, grinding time and chemical composition are tabulated in Tables 1, 2 and 3 respectively. To improve the low remanence of the oxide magnets, sintering at 1200 to $1260^\circ C$ in a magnetic field was tried in a special apparatus (Fig 1).
Fig 2 shows the relation between the field strength and ✓

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L 10461-57 EWT(d)/EWT(1)/EWP(m)/EWT(m) JD

ACC NR: AP6031043

SOURCE CODE: UR/0146/66/009/004/0078/0084

AUTHOR: Shchepkina, V. M. 46

ORG: Leningrad Military Engineering Academy im. A. F. Mozhayskiy (Leningradskaya voyennaya inzhenernaya Krasnoznamennaya akademiya)

TITLE: Effect of hypersonic speed on vertical-channel errors of an inertial system

SOURCE: IVUZ. Priborostroyeniye, v. 9, no. 4, 1966, 78-84

TOPIC TAGS: inertial navigation equipment, navigation system

ABSTRACT: The effect is considered of hypersonic speed on the errors associated with determining the altitude of a moving flight vehicle by means of an inertial navigation system.^a The solution of a system of differential equations that describe the errors of the vertical channel indicates that, with constant sources of error,

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UDC: 62-50

SHCHEPKOVSKIY, L. Ya.

Mechanized means for the storage and conveying of die-
casting molds and dies. Mashinostroitel' no.3:13 Mr '63.
(MIRA 16:4)
(Technological innovations)

SHCHEPKINA, OI.

The formation of oil in sunflower seed studied during the different stages of the process. O. I. Shchepkina, *Chernykh Zerkno* (Black Iron). Krasnodar, 1964, No. 7, 1968, 43, 684. Contrary to the generally admitted theory according to which sunflower seed oil is formed at the expense of the glucides and is distributed exclusively in the protoplasmic cells, it was found that the denon grains also contain some. To obtain a max. oil yield it is therefore necessary to destroy the latter as well as the protoplasm. On the other hand, the formation of oil in sunflower seed is closely related to the formation of proteins, there even being an inverse relation between the contents of these 2 constituents. A. Papanin, *Vestnik*

ASB-5LA METALLURGICAL LITERATURE CLASSIFICATION

SHCHEPKINA, O. I.

Soil micro-organisms

D. I. Ivanovskii and certain problems of soil microbiology., Mikrobiologiya, 20,
no. 6, 1951.

Monthly List of Russian Accessions, Library of Congress, March 1952. UNCLASSIFIED.

SHCHEPKINA, O.I.

Effect of the Mal'tsev tillage system on the microflora of Azov
region Chernozems in Rostov Province. Trudy Inst. mikrobiol.
no.7:148-155 '60. (MIRA 14:4)

1. Kafedra fiziologii rasteniy i genetiki Rostovskogo-na-Donu
gosudarstvennogo universiteta.
(ROSTOV PROVINCE—SOIL MICRO-ORGANISMS) (TILLAGE)

80950
S/024/60/000/03/012/028
E140/E463

3.3000

AUTHOR:

Shchepkina, V.M. (Leningrad)

TITLE:

The Effect of Flight Velocity of a Space Vehicle on
the Error of an Inertial Navigation System ✓

PERIODICAL:

Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh
nauk, Energetika i avtomatika, 1960, Nr 3, pp 96-105 (USSR)

ABSTRACT:

At ultrasonic flight velocities the rate of rotation of
a space vehicle with respect to the center of the earth
reaches appreciable magnitudes and may exceed by a factor
of 10 or 12 the angular velocity of revolution of the
earth. This angular velocity causes appreciable
variation of the errors of an inertial navigation system
and gives rise to interaction between the motions of
the space vehicle in the lateral and longitudinal
directions. The system considered is purely inertial in
which the stabilized plane should remain parallel to the
plane of the true horizon during the entire time of
flight. It is assumed that flight occurs over the arc of
a great circle of variable radius (variable height of
flight) and the direction of flight coincides with the
direction of one of the axes of the stabilized plane. ✓

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S/024/60/000/03/012/028
E140/E463

The Effect of Flight Velocity of a Space Vehicle on the Error of
an Inertial Navigation System

Schuler period. These oscillations are superimposed on an aperiodic motion. It is found that the lateral error for a given forward velocity depends on the error in the initial lateral velocity and the initial adjustment of the platform in the longitudinal and vertical directions and on the deviations of the pitch and azimuth gyroscopes. Calculations show that the last factor is the most important. The error in the longitudinal direction with gyroscope deviation $0.5^\circ/\text{hr}$ is the most important. With better stabilization, the initial errors in the vertical and longitudinal velocities become decisive. The component of longitudinal error due to the initial error in the vertical velocity exceeds the other sources of error with velocities $\geq 5 \text{ km/sec}$. The initial error of the longitudinal velocity is fairly strongly expressed at all flight velocities. It is therefore necessary to maintain a given value of longitudinal flight velocity to a high degree of precision. In all cases the errors decrease with increase of velocity. Acknowledgments

Card 3/4

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S/024/60/000/03/012/028
E140/E463

The Effect of Flight Velocity of a Space Vehicle on the Error of
an Inertial Navigation System

are made to Ye.P. Popov who directed this work. There
are 6 figures and 1 English reference.

SUBMITTED: January 20, 1960

4

Card 4/4

USSR/Medicine - Anesthesia, Intravenous
Medicine - Pentothal, Toxicity

Jun 48

"Blood Condition During Pentothal Narcosis," Ye. V.
Shchepkina, Lab of TsITO (Gen. Inst of Traumatol and
Orthopedics), 4 pp

"Khirurgiya" No 6

Research was carried out on 30 patients. Quantity of
hemoglobin and erythrocytes in blood decreases during
operation under pentothal narcosis. Describes effect
of pentothal on leucocytes, lymphocytes, eosinophiles,
and monocytes. Concludes that toxic effect of pento-
thal is no higher than that of other narcotics.

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